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EXAMINER	
KARIKARI, KWASI	
ART UNIT	**PAPER NUMBER**
2686	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/500,632	RUUTU ET AL.	
	Examiner	Art Unit	
	Kwasi Karikari	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *02 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-34* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09/15/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 4-34 have been considered but are moot in view of the new ground(s) of rejection.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 09/15/2005 is in compliance with the provision of 37 CFR 1.97, has been considered by the Examiner, and made of record in the application file.

Claim Objections

Claim 14 is objected for the following reasons:

It appears the phrase " claim 1, where in the first and the second receivers are the same entity" is minor mistake. To expedite prosecution, examiner is considering claim 14 as being " a telecommunication system according to claim 1, wherein the first and the second receivers are separate entities".

Corrections are required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,14,21,22,24,26,30,33 and 34 are rejected under 35 U.S.C. 102(b) as being unpatentable over Sanderford, Jr. et al., (U.S. 4,799,062) (hereinafter Sanderford).

Regarding **claims 1,30 and 34** Sanderford discloses telecommunications system (position determination system 100, see Fig. 2) comprising:

a first transmitter unit situated at a first, known location (mobile reference transmitter 108);

a second transmitter unit situated at a second, unknown location (transmitter 108 at unknown location);

a first receiving unit at a third, known location arranged to receive signals from the first and second transmitter units (base repeater 110 at known location to receive reference and radio wave signals from the first and second transmitters respectively, see col. 6, lines 36-54), and further arranged to determine the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit (base repeater 110 computes the phase difference, which is related to time difference, of the signals it receives, see col. 5, lines 25-47) and

a second receiving unit (base repeater 110 at known location to receive reference and radio wave signals from the first (108) and second (106) transmitters respectively, see col. 6, lines 36-54) at a fourth, known location arranged to receive signals from the first and second transmitter units, and further arranged to determine the

time difference between the arrival time of a signal from the first transmitter unit and a signal from the second transmitter unit (base repeater 110 computes the phase difference, which is related to time difference, of the signals it receives, see col. 5, lines 25-47),

wherein the said time differences determined by the first (110) and second receiving units (110) are usable to ascertain the location of the second transmitter unit (central monitoring station 115, which is coupled to base repeaters (110), uses the measurements from base repeaters to computer for the location of unknown transmitter 106, see col. 6, lines 36-54).

Regarding **claim 2,** Sanderford discloses the telecommunications system according to claim 1, wherein the signals are indicative of the time taken for the signals to arrive at the first and second receiving units from the first and second transmitters (signals receives at repeaters 110 provide the propagation time difference that each repeater relays to the central monitoring station, which is coupled to the base repeaters 110, see col. 5, lines 35-54).

Regarding **claim 14,** Sanderford discloses the telecommunications system according to claim 1,wherein the first and second receivers are separate entities (see items 110, Fig. 2).

Regarding **claim 21,** Sanderford discloses a telecommunications system according to claim 1, wherein the second transmitter unit is in a fixed location (the coarse fix unknown of transmitter 106 is computed, see col. 5, lines 48-62).

Regarding **claim 22,** Sanderford discloses a telecommunications system according to claim 1,further comprising a calculation unit arranged to use the signals received by the first and second receiving units or any values derived from the said signals to ascertain the location of the second transmitter unit (central monitoring station 115 compute for the location of transmitter 106, see col. 5, lines 48-62).

Regarding **claim 24,** Sanderford discloses a telecommunications system according to claim 22, located within a telecommunications network, wherein the calculation unit is a network management unit (central monitoring station 115 compute for the location of transmitter 106, see col. 5, lines 48-62).

Regarding **claim 26,** Sanderford discloses telecommunications system (position determination system 100, see Fig. 2) comprising:

a first transmitter unit situated at a first, known location (mobile reference transmitter 108);

a second transmitter unit situated at a second, unknown location (transmitter 108 at unknown location);

a first receiving unit at a third, known location arranged to receive signals from the first and second transmitter units (base repeater 110 at known location to receive reference and radio wave signals from the first and second transmitters respectively, see col. 6, lines 36-54), and

a second receiving unit (base repeater 110 at known location to receive reference and radio wave signals from the first (108) and second (106) transmitters

respectively, see col. 6, lines 36-54) at a fourth, known location arranged to receive signals from the first and second transmitter units, wherein the said signal received by the first and second receiving units are usable to ascertain the location of the second transmitter unit, (base repeater 110 computes the phase difference, which is related to time difference, of the signals it receives, see col. 5, lines 25-47; and

a calculation unit arranged to use the signal received by the first and second receiving units or any value derived from the said signals to ascertain the location the location of the second transmitter unit (central monitoring station 115, which is coupled to base repeaters (110), uses the measurements from base repeaters to computer for the location of unknown transmitter 106, see col. 6, lines 36-54);
where in the calculation unit is arranged to verify the accuracy of the ascertained location of the second transmitter unit by comparing it with location information of the second transmitter unit obtained from other sources (the calculated accuracy of the location is 400 feet in the city, and the preliminary time-of-flight field test using cesium atomic clocks indicates 50 feet, see col. 6, lines 21-35).

Regarding **claim 33,** Sanderford discloses a calculation unit (115) for use in a telecommunications system comprising:

a first transmitter unit situated at a first, known location (mobile reference transmitter 108);

a second transmitter unit situated at a second, unknown location (transmitter 108 at unknown location);

a first receiving unit at a third, known location arranged to receive signals from the first and second transmitter units (base repeater 110 at known location to receive reference and radio wave signals from the first and second transmitters respectively, see col. 6, lines 36-54), and further arranged to determine the time difference between the arrival times of a signal from the first transmitter unit and a signal from the second transmitter unit (base repeater 110 computes the phase difference, which is related to time difference, of the signals it receives, see col. 5, lines 25-47) and

a second receiving unit (base repeater 110 at known location to receive reference and radio wave signals from the first (108) and second (106) transmitters respectively, see col. 6, lines 36-54) at a fourth, known location arranged to receive signals from the first and second transmitter units, and further arranged to determine the time difference between the arrival time of a signal from the first transmitter unit and a signal from the second transmitter unit (base repeater 110 computes the phase difference, which is related to time difference, of the signals it receives, see col. 5, lines 25-47),

wherein the said time differences determined by the first (110) and second receiving units (110) are usable to ascertain the location of the second transmitter unit (central monitoring station 115, which is coupled to base repeaters (110), uses the measurements from base repeaters to computer for the location of unknown transmitter 106, see col. 6, lines 36-54).

Claim Rejections - 35 USC § 103

4 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4,5,6,7,8,9,10,11,13,15,16,20 and 23 are rejected under U.S.C. 103(a) as being unpatentable over Sanderford in view of Haworth (U.S. 6,018,312), (hereinafter Haworth).

Regarding **claim 4**, as applied to claim 1, Sanderford fails to teach the first and/or second receiving units are moveable between a plurality of locations and are both arranged to receive a pair of signals when in each of the plurality of locations.

Haworth's teaches of the satellite 14 and 16 in geosynchronous obit receiving signals from transmitters 10 and 22 (see col. 7, line 30-col. 8, line 9 and Fig. 2).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Haworth into the system of Sanderford for the benefit of achieving a system that can determine an unknown location of transmitter.

Regarding **claim 5,** Sanderford further discloses the telecommunications system according to claim 4, wherein a said pair of signals (radio wave and reference signals) received by the first receiving unit (110) and a said pair of signals received by the second receiving unit (110) are together useable to calculate a range of possible

locations of the second transmitter unit (performing hyperbolic lines of position calculation to determine the location of the unknown transmitter 106, see col. 5, line 48- col. 6, line 5).

Regarding **claim 6,** Sanderford further discloses the telecommunications system according to claim 5, wherein the range of possible locations is in the form of a hyperbola in the X-Y plane in which the second transmitter (106) unit is located, the said hyperbola running through substantially the location of the second transmitter unit (performing hyperbolic lines of position calculation to determine the location of the unknown transmitter 106, see col. 5, line 48- col. 6, line 5).

Regarding **claim 7,** Sanderford further discloses the telecommunications system according to claim 5, wherein in each of the plurality of locations the first and second receiving units receive pairs of signals which differ from those pairs of signals received when the first and second receiving units are in others of the plurality of locations and the said different pairs Of signals are together usable to calculate different ranges of possible locations of the second transmitter unit (the differential position vector derived from the radio wave and reference signals is used to computer for the location of the unknown transmitter 106, see col. 6, lines 35-53).

Regarding **claim 8,** Sanderford further discloses the telecommunications system according to claim 7, wherein the different ranges of possible locations substantially

coincide at a single common location that is substantially the location of the second transmitter unit (performing hyperbolic lines of position calculation to determine the location of the unknown transmitter 106, see col. 5, line 48- col. 6, line 5).

Regarding **claim 9,** Sanderford further discloses the telecommunications system (100) according to claim 4,wherein, in any given location of the first and second receiving units (110), the pair of signals (radio wave and reference signals) received by the first receiving unit is the same pair of signals that is received by the second receiving unit (signals are received at base repeaters 110, see col. 6, lines 35-53).

Regarding **claim 10,** Sanderford further discloses the telecommunications system according to claim 4, wherein in any given location of the first and second receiving units, the pair of signals received by the first receiving unit is a different pair of signals from the pair of signals received by the second receiving unit (radio wave signal from transmitter 106 at an unknown location and reference signal from a reference location, are received at the base repeater 110, see col. 6, lines 35-53).

Regarding **claim 11**, as applied to claim 4, Haworth further teaches wherein the plurality of locations is three locations (satellite 14 and 16 in geosynchronous orbit receiving signals from transmitters 10 and 22 and are being in different locations as they move see col. 7, line 30-col. 8, line 9 and Fig. 2)

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Haworth into the system of Sanderford for the benefit of achieving a system that can determine an unknown location of transmitter.

Regarding **claims 13 and 23** as applied to claims 2 and 22, Haworth's further teaching of signal processing at single processing site thereby improving the accuracy of DFO (see col. 27, lines 46-62 and col. 27, lines 35-35), meets the limitations of wherein the signals are further indicative of their quality or accuracy.

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Haworth into the system of Sanderford for the benefit of achieving a system that can determine an unknown location of transmitter.

Regarding **claim 15,** Sanderford discloses telecommunications system (position determination system 100, see Fig. 2) comprising:

a first transmitter unit situated at a first, known location (mobile reference transmitter 108);

a second transmitter unit situated at a second, unknown location (transmitter 108 at unknown location);

a first receiving unit at a third, known location arranged to receive signals from the first and second transmitter units (base repeater 110 at known location to receive reference and radio wave signals from the first and second transmitters respectively, see col. 6, lines 36-54), and

a second receiving unit (base repeater 110 at known location to receive reference and radio wave signals from the first (108) and second (106) transmitters respectively, see col. 6, lines 36-54) at a fourth, known location arranged to receive signals from the first and second transmitter units, wherein the said signal received by the first and second receiving units are usable to ascertain the location of the second transmitter unit,(base repeater 110 computes the phase difference, which is related to time difference, of the signals it receives, see col. 5, lines 25-47; and central monitoring station 115, which is coupled to base repeaters (110), uses the measurements from base repeaters to computer for the location of unknown transmitter 106, see col. 6, lines 36-54), but fails to teach wherein the first and second receivers are the same entity.

Haworth teaches two satellites 14 and 16 and being in geosynchronous orbit (see col. 7, lines 31-46).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Haworth into the system of Sanderford for the benefit of achieving a system that can determine an unknown location of transmitter.

Regarding **claim 16,** Sanderford further discloses telecommunications system according to claim 15, wherein the said same receiver entity is arranged to act as the said first receiver during a first period of time and as the said second receiver during a second separate period of time (signal transmission from transmitters involves synchronization process, see col. 5, lines 15-62) .

Regarding **claim 20**, as recited in claim 1, Sanderford further discloses that one or both of the first and second receivers is a location measurement unit (base repeaters 110 computes the phase difference, see col. 5, line 35-46).

5. **Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderford as applied to claim 1 above, further in view of Hunzinger et al., (U.S. 6,661,998) (hereinafter Hunzinger).**

Regarding **claim 12**, Sanderford discloses the claimed limitations, but fails to teach that the signals received by the first and second receiving units are received in response to signals sent to the first and second transmitter units by the first and second receiving units.

Hunzinger teaches mobile station sending and initial request the base station and the base station acknowledging the request, thereby allowing both the base station and the mobile station to communicate to each other (see col. 2, lines 13-31).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Hunzinger into the system of Sanderford for the benefit of achieving a communication system where both the mobile and base station could communicate to each other.

6. **Claims 17,18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderford as applied to claim 1 above, further in view of Hussa (U.S. 6,611,788), (hereinafter Hussa)**

Regarding **claim 17**, Sanderford discloses the claim limitations, but fails to teach that the one or both of the first and second receivers is a mobile telephone.

Hussa discloses cellular communication network system including a mobile Station, base station, a core network and radio network controllers (see col.1, lines 47-53). Hussa further teaches that the mobile station is may comprise of a cell phone (see col. 8, lines 9-15).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Hussa into the system of Sanderford for the benefit of achieving a system with a mobile cell phone that could be tracked.

Regarding **claim 18**, as applied to claim 17, Sanderford discloses the claim limitations, but fails to teach the said mobile telephone supports Enhanced Observed Time Difference (E-OTD) location method and Global Positioning System (GPS) location method, or Observed Time Difference Of Arrival (OTDOA) location method and Global Positioning System (GPS) location method.

Hussa discloses cellular communication network system including a mobile Station, base station, a core network and radio network controllers (see col.1, lines 47-53). Hussa further teaches an E-OTD and GPS methods with the mobile cell phone (see col. 4, lines 31-44).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Hussa into the system of Sanderford for the benefit of

achievjng a system with E-OTD and GPS method of determining time difference between signal receptions.

Regarding **claim 25** as applied to claim 22, Sanderford discloses the claim limitations, but fails to teach the calculation unit is a Serving Mobile Location Centre.

Hussa discloses cellular communication network system including a mobile station, base station, a core network and radio network controllers (see col.1, lines 47-53 and col. 4, lines 21-31). Hussa further teaches a serving mobile location center (SMLC) which may be integrated into the radio network controller (RNC).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Hussa into the system of Haworth for the benefit of achieving a system with SMLC where a calculation of time of arrival is stored.

7. **Claims 19,28,29,31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderford as applied to claim 1 above, further in view of Riley et al., (U.S. 20030125046 A1), (hereinafter Riley).**

Regarding **claim 19**, Sanderford discloses the claim limitations, but fails to teach one or both of the first and second transmitter units is a cellular base station.

Riley teaches cellular telephone network using a GPS system for locating mobile telephone unit (see Page 2, line [0025]). Riley further discloses the base station may send GPS acquisition data to the hybrid mobile station (see Page 3, line [0029]).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Riley into the system of Sanderford for the benefit of achieving a system with a base station which can communicate with the a GPS system.

Regarding **claims 28 and 31**, Sanderford discloses the claims limitations, but fails to teach that the first and second transmitters are base stations.

Riley teaches cellular telephone network using a GPS system for locating mobile telephone unit (see Page 2, line [0025]). Riley further discloses base station in the cellular telephone network that provides base station time base referenced to GPS system (see Page 3, line [0030]).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Riley into the system of Sanderford for the benefit of achieving a system with a base station that can communicate with a GPS system.

Regarding **Claims 29 and 32**, Sanderford discloses the claimed limitations, but fails to teach that the transmitters are base stations.

Riley further discloses base station in the cellular telephone network that provides base station time base referenced to GPS system (see Page 3, line [0030] and Fig. 1, items # 11 and 12).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Riley into the system of Sanderford for the benefit of achieving a system with a base station that can communicate with a GPS system.

8. **Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over**

Sanderford as applied to claim 1 above, further in view of Shoji et al. (U.S. 6,134,448), (hereinafter Shoji)

Regarding **claim 27,** Sanderford discloses telecommunications system (position determination system 100, see Fig. 2) comprising:

a first transmitter unit situated at a first, known location (mobile reference transmitter 108);

a second transmitter unit situated at a second, unknown location (transmitter 108 at unknown location);

a first receiving unit at a third, known location arranged to receive signals from the first and second transmitter units (base repeater 110 at known location to receive reference and radio wave signals from the first and second transmitters respectively, see col. 6, lines 36-54), and

a second receiving unit (base repeater 110 at known location to receive reference and radio wave signals from the first (108) and second (106) transmitters respectively, see col. 6, lines 36-54) at a fourth, known location arranged to receive signals from the first and second transmitter units, wherein the said signal received by the first and second receiving units are usable to ascertain the location of the second transmitter unit, (base repeater 110 computes the phase difference, which is related to time difference, of the signals it receives, see col. 5, lines 25-47); but fails to teach wherein the ascertained location of the second transmitter unit is usable to check the accuracy of identification information of the second transmitter unit obtained form other sources and thus identify the second transmitter.

Shoji teaches that the position calcular of the mobile station is determined by the information accurate information obtained from the base station (see col. 4, lines 32-38) It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Shoji into the system of Sanderford for the benefit of achieving a system that can use an accurate information from the base station to determine an unknown position of a mobile phone.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Perl et al., (20050035897 A1) teaches a target location using TDOA distributed antenna.

Holt (20030052821 A1) teaches a method and system for calibrating wireless location system.

Stilp et al.,(20050024265 A1) teaches a multiple pass location processor.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwasi Karikari whose telephone number is 571-272-2856. The examiner can normally be reached on M-F (8 am - 4pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on 571- 272 5905. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kwasi karikari

CHARLES APPIAH
PRIMARY EXAMINER